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THE IRISH JOURNAL OF MEDICAL SCIENCE

FORMERLY

THE DUBLIN JOURNAL OF MEDICAL SCIENCE

THE OFFICIAL ORGAN OF THE ROYAL
ACADEMY OF MEDICINE IN IRELAND

EDITED BY

Biological

& Medical

Serials

A. K. HENRY, M.B., F.R.C.S.I.



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PUBLISHED MONTHLY.

SEPTEMBER, 1922.



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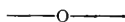
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FIFTH SERIES. No. 7. SEPTEMBER, 1922

Original Communications.



PRINCIPLES OF COLLOID THERA-
PEUTICS.*

BY WALTER G. SMITH.

BEFORE considering the therapeutic application of colloids, it is advisable to make a few introductory and explanatory remarks.

It is true that the colloidal state of matter is still wrapped in considerable obscurity, and many fundamental questions await an answer. Yet it is certain that a broad and new field of scientific inquiry has been opened up and cultivated with an astonishing degree of success. Its achievement is great and its promise still greater.

If anyone were to ask—Is it possible to give a rigid scientific definition of a colloid, the answer must be in the negative.

It is now universally agreed that colloids do *not* represent a separate world of matter, as supposed by Graham when

* Read before the Section of Medicine, Royal Academy of Medicine in Ireland, May 26, 1922.

he first voiced his views, 60 years ago. The concept *colloid* was born of experiments on diffusion.

How, then, are we to regard them?

The key to the answer lies in the limits of divisibility, or degree of dispersion, which can be effected in bodies, solid, liquid, or gaseous.

It is well recognised that there are innumerable and gradual transition stages, from coarse masses of material, *e.g.*, minerals and crystals, on the one hand, to powders of any degree of fineness; to suspensions or emulsions of minute particles of solids or liquids, until we arrive at true molecular solutions, *e.g.*, salt in water, on the other hand: a true solution is nothing but a molecularly dispersed state of matter.

The diameter of a molecule is of the order, 0.1 to 1.0 $\mu\mu$.

The thickness of gold leaf is about 0.1 μ . The pores of the best porcelain filters are about 0.2 to 0.4 μ . in diameter.

Let us look at the subjoined table.

Dispersed Systems.		
V		
Coarse Dispersions (Precipitates).	COLLOIDS	Molecular Dispersoids. (True Solutions).
V	V	V
	0.1 μ . to 1.0 $\mu\mu$.	Smaller than 1.0 $\mu\mu$.
Particles larger than 0.1 μ . do not pass through paper filters.	Pass through paper filters.	pass through filter paper.
Do not dialyse.	Cannot be analysed microscopically.	Cannot be analysed microscopically.
Microscopically analysable.	Do not readily diffuse or dialyse.	Diffuse and dialyse.

The colloid state is a universally possible state of matter.

One and the same substance may appear in all possible degrees of dispersion, *e.g.*, sulphur.

From this table we gather that colloids are dispersed systems in which the diameter of the dispersed particles lies between $\frac{1}{1,000}$ m.m. and $\frac{1}{1,000,000}$ m.m. The term colloids connotes simply a degree of dispersion, or divisibility, within certain specified limits, conventionally accepted.

In other words, colloids represent a realm of matter differentiated for practical purposes from a continuous series of systems. We draw the line between colloid and molecular dispersion at $\frac{1}{1,000,000}$ of a m.m. In Ostwald's picturesque phrase, colloids are "the world of neglected dimensions."

By way of illustration let me adduce some familiar examples of dispersion in solids, liquids, and gases, *inter se*. Thus if gas (air) is diffused through liquid, we get *foam* (soap-suds); if, a liquid through gas, we have *fog*, *mist*, and *clouds*. A liquid dispersed through another liquid with which it is unmixible yields an emulsion, *e.g.*, *milk*, the latex of plants, or *mayonnaise* sauce. A solid dispersed through gas is seen in tobacco smoke and in cosmic dust. A solid in liquid, *India ink*, and the various collosols now on the market. A solid—gold, dispersed through another continuous solid—glass, is illustrated in *ruby glass*. Faraday's marvellous and prophetic insight recognised this latter fact in 1857, four years previous to the classical researches on colloids by Graham in 1861. Alloys belong to the system solid + solid.

The terms colloid "emulsoids" (*e.g.* margarin) and "suspensoids" represent, respectively, the cases of finely dispersed liquid and solid particles. Liquid colloids are known as "sols;" their coagulation products, as "gels."

Protoplasm may be said to be a hydrated emulsoid. Living matter is constantly oscillating between the extremes of a solid "gel" and a liquid "sol," for our bodies are built up chiefly of colloids, and all life processes take place in a colloid system. Some important dyes are colloids, *e.g.*, congo red and night blue. Colloid dispersion is intimately related to our daily life in other respects. If there were no dispersoid particles in the atmosphere, *e.g.*, if the air were optically empty, human life would be impossible on our globe.

The red hot sun would scorch and glare upon us from the pitiless sky. It would stand in the heavens as a flaming disc upon a dark background. Wherever the sunlight did not strike directly there would be deep shadow; there would exist everywhere a garish contrast between the lighted and the unlighted, and we would have no diffused and tempered daylight of the kind we now enjoy. (Wo. Ostwald).

In photographie processes the colloidal "sols" of silver

bromide are often wrongly termed "emulsions." This is a misnomer for, strictly speaking, they are "suspensoids," in which gelatin acts as a protective colloid. Similarly, what are commonly known as emulsions of bacteria are really suspensions, varying in dispersity, according to the kind of bacteria.

In connection with photography it is worth while to mention that a key seems now to have been found to an old-standing and fascinating puzzle, viz., the chemical nature of the substances comprising the *latent picture*. The chemical guess that this is due to certain hypothetical sub-salts of Ag has never been experimentally demonstrated and may be cast aside.

The truth about the latent image is this. It represents *adsorption* complexes of colloid silver in different degrees of dispersion, with normal non-reduced silver haloids. This view is beautifully demonstrated by the experiments of W. Reinders who has succeeded in producing these photo-haloids synthetically in the form of differently coloured crystals by allowing different silver haloids to crystallise in the presence of differently coloured colloid silvers. The truth is, that the photo-haloids of silver represent adsorption complexes of colloid silver in different degrees of dispersion with normal non-reduced silver haloids. (Wo. Ostwald).

Now minute sub-division of particles necessarily involves an immense increase in surface area, and this is a point of essential significance in the interpretation of many chemical and physiological phenomena. The enormity of the adsorbing surfaces in such dispersed systems is not generally appreciated.

Take, for example, the case of grains of shot. A sphere, with radius of 1 c.m. will have a surface of 12.6 sq. cm. If sub-divided into spheres of 1 m.m. radius, the surface will be 126 sq. cm. If into spheres of 1 m. radius, the surface will be 12.6 sq. m. In a true molecular solution, the same mass sub-divided into spheres of 0.1 μ . would have the enormous surface of 126,000 sq. m.

Or, take another example.

A cube, the side of which is 1 cm. has a surface area of 6 sq. cm. If distributed into cubes, sides = 0.01 mm. (the average size of a red disc) the surface would be 6,000 sq. m.

If the length of the side were reduced to 1 μ . (*i.e.* the size of a small coccus) the area would be 6 sq. m. Adsorption, *i.e.*, surface condensation, is chiefly dependent upon the size of the adsorbing surface is an important factor.

Let me illustrate to you experimentally the divisibility of matter, and also how colour depends upon the degree of subdivision. It is easy to show that gold and silver are pan-chromatic.

Gold. The two most convenient and simple reagents are those recommended by Wo. Ostwald, viz., Tannin, and Hydrazin. To a very dilute solution of *neutralised* auric chloride, add a few drops of a very dilute solution (about 0.1 per cent.) of tannin. Warm, shaking constantly.

According to the relative proportions, it is easy to get either red or violet gold. Ordinary tap water may be used. If a very dilute solution of a salt of hydrazin is added to a dilute *neutral* solution of gold chloride, a fine blue colour is obtained. *Purple of Cassius*, obtained by reduction of gold with stannous chloride is one of the oldest and most delicate tests for gold. So also is the colour imparted to a bead of borax, gently heated on a platinum loop with a very delicate solution of au cez.

Silver. Can be obtained as a bronze-like film by reduction with ferrous citrate (Carey Lea).

With other reducing agents it can be obtained as yellow or blue solutions. A few drops of dilute HCl added to any of these solutions will throw down the metal in a pure metallic state.

Therapeutics of the Colloidal State.

Colloid physico-chemistry is rapidly extending the sphere of its sway. For many years after its recognition it only languidly appealed to the curious scrutiny of physicists and chemists.

By degrees, and with increasing speed it has extended its tentacles in many directions and has gripped hold of innumerable problems in the arts and industries, in general biology, and in hygiene, to none of which can I now refer.

Among the more recent of its expansions is its application to therapeutics.

Colloids have long been used more or less unwittingly in medicine, *e.g.* resinous tinctures diluted with water.

Let us now inquire what foundation there is for the recent enthusiasm as to the reported therapeutic value of the new preparations.

In order to avoid prolixity a few examples must suffice.

Germicide Action.

Not all elements in the colloidal state have a germicidal action. Gold and platinum are inefficacious, whereas Ag, Hg, Sb, and As are active.

Observations recorded in Searle's book on "Colloids in Health and Disease" (1920. Constable and Co.) seem to establish the activity of collosols as germicides and disinfectants, and their great potentiality. It is not suggested that colloidal metal sols should replace the customary disinfectants for sterilising excreta, and so forth.

Local and Internal Use.

Bacteria possess a colloidal character, and, for local as internal administration, orally or hypodermically, collosols have the advantage of being rapidly fatal to the parasite without toxic action on the host.

The intense power of reaction displayed by elementary sols is very striking. They can induce chemical reactions to occur which would otherwise require conditions of temperature and pressure quite unattainable in the human subject. This enhanced reactivity is largely due to the enormous increase of surface area conditioned by the extremely minute size of the colloid particles. This large increase of surface greatly favours *adsorption*, *i.e.*, surface condensation, which plays an important part in many chemical and biological phenomena.

In ophthalmic practice colloidal silver gives good promise. Dr. A. L. Roe (*British Medical Journal*, 16-1-15), is so optimistic that, in his opinion, if colloidal silver were adopted in every case of purulent ophthalmia of infants, "there would be no such thing as impaired sight or blindness from this cause." Can any of my hearers confirm this? Colloidal silver is not organotropic and has been used for several months con-

secutively without staining the conjunctiva. (*Culture plates exhibited*). Colloidal silver has been successfully used in pyelography with *x*-rays by Dr. Frank Kidd (*Brit. Med. Journ.*, 13th May, 1922).

In another class of cases, colloidal manganese has been used with remarkable and surprising results in coccogenic skin diseases, *e.g.*, boils, deep-seated impetigo and acne. The three cases of such kind reported by Sir Malcolm Morris (*British Medical Journal*, 1918. I. 446) are so remarkable that they demand close attention. It was extraordinary how quickly the lesions cleared up and the general health improved.

My own limited experience of the utility of colloidal manganese inclines me to support this contention.

I may here refer to a striking case under my care. A lady aged 26, was referred to me by Dr. Rainsford. She was afflicted with severe acne of the face for 15 years, and was hopeless of ever being cured. The face, forehead, cheeks, and especially the chin, was thickly studded with hideous pustules, deep-seated red nodules, and large indolent lumps. The skin of the chin, even where fairly level, was thoroughly unhealthy, in a boggy condition, and easily broke down on pressure. There were very few comedones.

So distressed was she by the disfigurement that she dreaded to meet people, and it so preyed on her mind that, for a time, she was placed in an asylum on account of melancholia. When she left the asylum, restored in mind, she passed under my care in January of this year.

The local treatment was very painful, but I am convinced from long experience, that it is the best method of dealing with such obdurate cases. There is little or no use in mere surface treatment with lotions or ointments, for the disease is too deeply situated.

It is absolutely essential to get to the bottom of the nodules and pimples. This is effected by a tiny curette, or, better, by a blunt pointed bit of hard wood, which must be forcibly pushed into the base of each pimple.

The point is dipped into a mixture of tinct. iodi. and glyc. ac. carbol, say, two or three parts to one, and the drilling out of each pimple is done two or three times if necessary. The free bleeding is easily staunched, and then each little hole or

cavity is stuffed with "Bipp" ointment. I can vouch for the success of this energetic line of treatment.

Taking into account the long duration and intractable recurrences of the disease in this case I thought it a suitable one to supplement the local treatment by the internal use of colloidal manganese. The drug was given by intra-muscular injection into the upper arm: an ampoule each time. Each ampoule contains 1 c.c. of colloidal manganese (2.5-1,000). In all she got some 10-12 injections. This plan succeeds in cases which had been previously treated by others unsuccessfully with vaccines. Doubtless, much of our practical therapeutics is based more upon our personal impressions than upon strict proof. Still, I cannot avoid believing that the cure in this case was materially aided by the manganese, and the tendency to recurrence checked. The girl is now practically quite well, and has regained her natural good looks and spirits.

Colloidal Copper.

Messrs. Oppenheimer put this on the market in the form of a dark red, dichroic liquid, which contains 0.1 per cent. of copper in the cuprous state, protected by a combination of amino-acids, which, *per se*, have a very low physiological action. Its trade name is "Oseol" cuprum.

It has been recommended and used in some cases of cancer, but the evidence on this point is not yet convincing. Dr. Bewley lately reported a remarkable case of an abdominal tumour in a lady, involving the wall of the abdomen. The diagnosis lay between malignant disease and some kind of inflammatory effect, and, clinically, the balance of opinion inclined to malignancy. She was terribly emaciated, and her life was in dire danger. Colloidal copper was given, and, after the first dose, improvement was manifest. Ultimately, the tumour disappeared, and she was restored to perfect health. Radium was also employed in this case.

One case does not count for much, yet the result which was as satisfactory as unexpected, is also suggestive.

Everyone will admit that most of the heavy elements have powerful pharmacological effects, and can be safely given only in small doses, which are usually soon excreted, or, otherwise disposed of and put out of action.

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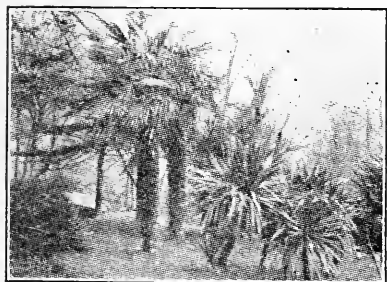
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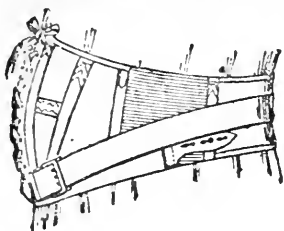
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Further, the action of each metal is, more or less specific in itself, and is addressed to particular organs or tissues of the body.

In the case of mercury it is realised that minute quantities administered frequently have an effect which is entirely different from that of the same substance administered in a single large dose. (Searle).

Colloid Sulphur.

This preparation, the last to which I shall refer, has, I think, a future before it, and is worthy of attention.

It is put up in different forms : as a milky, acid, watery fluid ; as a dark green oil, and, as a brown ointment. If the dark oil is rubbed on the skin its colour disappears when spread in a sufficiently thin layer.

Colloidal sulphur is extremely active, readily combines with protein, and is entirely absorbed in the stomach. Ordinary sulphur is not absorbed in the stomach at all and passes practically unchanged into the intestine (Searle)

A curious property of colloidal sulphur is its alleged power—when taken internally—of completely deodorising the fæces, and thus acting in precisely the reverse manner to ordinary sulphur. (Searle).

When we recall the extensive use of ordinary sulphur in the treatment of ringworm and other parasitic diseases of the skin, it is odd that H. Crookes found that colloid sulphur exhibited no germicidal action on exposed plates of nutrient gelatin, and even stimulated growth. Accordingly, I asked my friend, Dr. E. C. Smith to test this statement, and I show you his culture plates. It is evident that the colloid sulphur checks microbial growth, as might naturally have been expected.

Colloidal fluids retain their characteristic properties only so long as their active ingredient is in a properly dispersed and suitable colloid state.

Some of the reported observations on colloid therapeutics are inconclusive, and probably exaggerated, and some of the preparations put upon the market at first were carelessly prepared and were unstable.

Still, after making due allowance, there remains a substratum of evidence which is worthy of careful attention.

Any singularity in the operation of colloidal remedies may be ascribed to three chief factors :—

(a). Extremely minute subdivision of particles.

(b). Consequent enormous increase in surface area. The reaction-velocity of solids with liquids is proportional to the area of contact. (Weuzel).

(c). Activity of surface energy. Adsorption, *i.e.*, surface condensation.

The gist of the matter appears to lie in the fact that, in elementary collosols, when internally, or hypodermically administered, the active ingredient is gradually and slowly liberated, and passes into true solution.

We may thus conclude with Bayliss (*Lancet*, Jan. 7th, 1922) that, up to the present, no good evidence has been produced that the chemical or pharmacological action of substances in the colloidal state differs fundamentally from that in true solution otherwise than in the matter of gradual slow effect due to the minute size of the particles, and the enormous increase of surface area.

Exhibits of Experiments.

1. Diffusion through gelatin gel—Congo Red (—); Methylene blue (+).
2. "Protective" influence of a gel on chemical reaction.
3. Germicide action of "Argentum collosol."
4. Colloidol Gold (red and blue).
5. Colloidal Silver (gold-like).
6. Liesegang's Rings.

SOME ASPECTS OF STERILITY.

BY BETHEL SOLOMONS.

IN bringing before you a subject which is not a novelty I must tender apologies, but my excuse lies in the fact that since my last communication on sterility the majority of my gynæcological practice, both in hospital and in private, has consisted of patients suffering from this symptom or disease, for in truth it may be either.

In discussing the subject this evening I do not intend to delve so fully as in my address to the Dublin University Biological Association in 1919, neither do I desire to attempt to classify sterility, for I cannot see the benefit obtained thereby, nor do I intend to question the liability of the male, for the fact of the male being sometimes blameworthy is accepted, but in the succeeding pages an effort will be made to treat the subject generally, paying particular attention to points which have obtruded themselves on my notice. Statistics will be published at a later date.

Preventive medicine is the hope of the future, and the question naturally arises: Can sterility be prevented? As tuberculosis, gonorrhœa, and septic infection of the uterus from instruments and minor operations are main causes, let these be stamped out and there will be but little work for the expert in treating sterility. In other words, it appears at the present time that sterility will be rampant in our generation, at any rate, and it must therefore be the object of the gynæcologist to become expert in effecting cures.

If a woman who is sterile—that is, who has never had even an abortion—seeks advice, her general life must be looked into, and as in the great European war many women who desired children and whose pelvic organs were normal were informed that when they were able to live a normal life again—that is, when their minds were at rest—they would probably conceive, so in this war in Ireland it has been found necessary to advise wives of the different participants in the struggle to await a period when they had not the anxiety of shootings and

raids to contend with. Many women who during the war prayed for some operative treatment, and who were advised to wait have benefited by their patience. Often a change of air, scene, or a good tonic, or even a course of purgative treatment will cure a woman who considers herself sterile.

In dealing with sterility from constitutional causes the glands of internal secretion must in these days present themselves *pari passu*, at any rate, with other causes. They are all important and most important of all is the *corpus luteum*. For a patient who has scanty menstruation, or none, the result following the administration of *corpus luteum* is in some cases nothing short of miraculous. In one case, where the patient had never menstruated, the drug apparently started menstruation, six months after which pregnancy occurred. This patient did not nurse her child and menstruation did not return. After two years she wrote expressing her impatience at the absence of pregnancy. *Corpus luteum* was again recommended, menstruation returned for two months, after which she again became pregnant. The dose recommended is 5 grains daily for two days, then gradually increasing the amount until at the end of another month 10 grains three times daily are being taken. Anaphylaxis has never been noticed. The great disadvantage of the treatment is the expense, especially for dispensary patients. Parke Davis capsules of *corpus luteum* have been ordered always. The best results have been obtained with *corpus luteum*. Whole ovarian gland has also been used very successfully, both by mouth and hypodermically.

Where excessive obesity is found in association with sterility, and scanty or absent menstruation, thyroid extract is prescribed, in addition to a vigorous anti-fat diet. This is administered in $\frac{1}{2}$ -grain doses three times daily, an amount which is found sufficient when the dietary is properly carried out. Pituitary extract, testicular extract, and many pluri-glandular preparations have been tried, but with little success, and there seems to be very little doubt from clinical experience that the *corpus luteum*, as stated by Novak in his recent work, supplies the internal secretion which is chiefly concerned with menstruation, and on its activity pregnancy depends to a large extent.

In dealing with the local causes the obvious ætiological

factors found in the vulva and vagina may be quickly passed over and the uterus considered. The cervix must be mentioned in connection with the body of the uterus, for a word must be said about the popular subject of dilatation and curettage. In my opinion this is the most dangerous operation in the hands of the unskilled that has ever been invented. It is done too often unnecessarily, and when necessary it is often done so badly that it leaves the woman incurably sterile or a life-long invalid. I do not belong to the band of gynæcologists who say curettage is a disastrous operation in 70 per cent. of cases, but I *do* say most definitely that curettage has very little place in the treatment of sterility.

It is a shameful thing to admit that in the present-day there are gynæcologists, so-called, who do what is known as "cauterisation of the womb" for sterility. I do not exaggerate when I state that I have seen at least one hundred cases of tubal disease who have been treated by curettage or much-repeated cauterisation of the endometrium. Whether the tubal disease was caused by the treatment, whether it was exacerbated by the treatment, or whether it was there before the treatment, does not matter; a diagnosis should have been made, and the woman should not have been subjected to unnecessary anæsthesia in some cases; to long and costly treatments in others. This raises the personal question as to whether curettage should be practised at all. The answer is an unqualified affirmative, for where a woman is suffering from heavy hæmorrhage with associated sterility a carefully performed curettage benefits, but such cases of hæmorrhage are few and far between. I know well that speakers will tell of many sterile women who have become fruitful following this minor operation. We have all had them, but they are very few out of many. In other words, if a woman is suffering from endometritis, as shown by heavy menstruation, curette her: if not, the operation is harmful. While curetting is often unnecessary, some form of dilatation of the cervix is most necessary. Although good results have been obtained by the use of glass dilators, which are left *in situ* for some time, I have seen no reason to change my technique, and I still use Kelly's modification of Hegar's dilators, taking care only to dilate to a size when laceration of the cervix will not occur.

If iodoform gauze, two inches wide, is packed into the cervix and left there for twenty-four hours, it can easily be demonstrated a week or two later that the dilatation is not temporary, but permanent. This permanent dilatation is not of the exact calibre of the largest dilator used, but approximates to it; in fact, if the cervix has been dilated up to 12 mm. on examination some weeks later an 8 mm. dilator can readily be passed into the uterus. When dealing with dilatation of the cervix the methods of keeping the cervical canal permanently patent and of reducing an acute anti-flexion must be considered. These may be generally divided into Pozzi's operation and a modification of Dudley's posterior division. The former may be put out of consideration immediately. I have not done it in recent years, and do not believe it has any advantage over a properly performed dilatation of the cervix. It is very necessary to dwell on the subject of posterior division of the cervix. Unfortunately it is thought to be an easy operation to perform. It seems to be the favourite routine of the gynaecologist whose patient returns still sterile, having had a previous curettage and who feels he must do something, and it is an operation most mal-performed and shares with curettage the likelihood of leading to life-long sterility more than any other method of treatment. One reason is that a woman having undergone two operations will refuse usually (and one might say naturally) to undergo still another. Again, the operation of posterior division is unsuccessful. There are several definite factors in this non-success. Catgut is nearly always the material employed, and in the method which is usually in vogue the strain on the catgut is too great, in consequence of which union is not by first intention, and there is left a scar from which a leucorrhœa continually pours, a state of affairs most inimical to the spermatazoa. It is possible to cure this by cutting out the scar and stitching the cervix together again, and I have had several cases of cure following this, but surely the days should be gone when the gynaecologist was described as a man who stitched up the cervixes which his brother gynaecologist had split. Having said so much, it must be stated that if a wedge-shaped piece is removed from each split side and the raw surfaces sewn together with silkworm gut, sutures which should

be left *in situ* for four weeks, then the operation is useful if the indication is carefully selected. This indication, which is seldom encountered, is extreme antelexion, so extreme that a sound can only be passed into the uterus with utmost difficulty. A word must be said about other operations on the cervix. When erosion is present it should be removed; when hypertrophy, amputation should be performed; in case of one—or two-child sterility, when the cervix is patulous or lacerated, it should be stitched. It is possible for me now to reiterate that carefully performed trachelorrhaphies and amputations, when indicated, are of benefit in case of sterility.

It is a well-known fact that displacement of the uterus, either mobile or fixed by adhesions, may cause sterility, and it is not my purpose here to say more than when present they should be corrected by operation.

Tubal disease deserves the greatest consideration for it is, if not the most common, the most overlooked ætiological factor. The classifications of tubal trouble which are found in text-books are generally unsatisfactory, and an attempt will be made here to describe the different pathological conditions of the tube as they are found in cases operated on.

Dealing with the conditions found in the abdomen the first which must be mentioned is the case of general tuberculous peritonitis with free fluid in the abdominal cavity. The only possible treatment is to close the abdomen; the outlook for the cure of sterility is nil. To deal with the curable cases they may be summed up as follows:—

(1) Tubes normal in size, shape and position; abdominal ostia closed.

(2) Tubes normal in size and shape, but bound down by adhesions.

(3) Tubes thickened in different positions.

(4) One tube normal, the other abnormal.

(5) Double hydrosalpinx.

(6) Double pyosalpinx.

Speaking generally of these, there may be no symptom other than sterility. If the tumour is large there may be pressure symptoms and spasmodic menstruation—that is, menstruation continuing for two or three days, ceasing, and commencing again, is fairly common.

In any of these varieties, when there is any suspicion of infection, Douglas's cul-de-sac is opened at the end of the operation. A forceps is passed up by an assistant through the vagina, the peritoneum is opened on it from the abdomen, and iodoform gauze is drawn out to the vulva. By drainage in this manner the chance of a pelvic abscess forming is practically nil, and in consequence the chance of a cure is greater. After meeting two cases where abscess formed in apparently harmless cases this procedure was adopted and has proved to be a success. This drainage is a technique new in my practice. It has proved itself to be highly advantageous, the only drawback being that the removal of the gauze is painful to the patient. This is overcome by a few whiffs of nitrous oxide.

(1) Tubes normal in size, shape and position, abdominal ostia closed.

On bimanual examination no abnormality will be detected. The uterus may be, and usually is, mobile, and the inexperienced may perform Alexander-Adams operation. I have found here in many cases the tubes, as described here, where gynæcologists have had the temerity to shorten the ligaments extraperitoneally without opening the abdomen.

The treatment of the tube depends on the extent of the blockage. Sometimes the ostium is blocked by what appears to be an organised clot; if the impediment can be removed by expression without in any way cutting the tube it is best; and often this can be done. After the tube is cleared it is wise to leave a plait of eight strands of catgut No. 4 in the lumen. If it is impossible to clear the ostium in this way the thickening must be removed with the fimbriated extremity if necessary. Then the edges must be over-sewn with fine catgut on a small needle, after which catgut is inserted in the lumen. The prognosis is not so good as where resection has not to be done.

It has been stated that the fimbria ovarica is an absolute necessity for a successful conception. This is not a fact, for in my own practice, and I know in that of others, there have been many cases of pregnancy after removal of the fimbriated end of the tube, including, necessarily, the fimbria ovarica.

(2) Tubes normal in size and shape, but bound down by adhesions (see Fig. 1).

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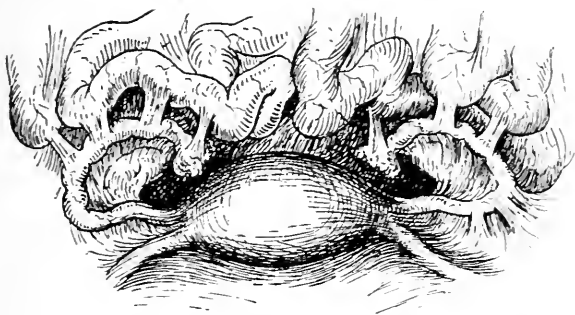


Fig. 1.

This, like the abnormality just described, is impossible to diagnose by symptoms and signs, and only when the abdomen is open is it apparent why conception has not occurred. It is then easy to free the adhesions, but care must be taken not to tear the fimbriated extremity which is most vascular, this vascularity being specially marked intermenstrually, or to leave bits adherent to the abdominal wall. Sometimes when the tubes are freed it is found that the fimbriæ are bleeding; this is easily stopped. The tubes are then blown up with air, and if any suspicion is present that the ostial mucous surfaces are raw catgut is inserted. The prognosis in this class of case is excellent.

(3) Tubes closed in different positions. These must be divided into—

- (a) At the uterine ostium or its neighbourhood.
- (b) On the isthmus.
- (c) At the fimbriated end or its neighbourhood.

(a) This is the most difficult form of sterility, and leaves least chance of a cure. The symptoms and signs are as in other classes of tubal disease so slight that they may be neglected, and it is not until the abdomen is opened that the exact state of affairs can be determined. Having ascertained that the other tube is in a similar state the next step must be determined on. An endeavour must be made to have patent the way from the tube into the uterus. Having ligated the mesentery (Fig. 2), the diseased part of the tube is cut away; careful hæmostasis is most important. A long, straight

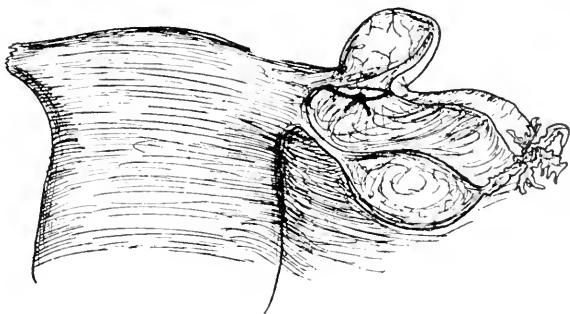


Fig. 2.

needle loaded with No. 2 catgut is passed through the tube; the needle is passed, blunt end first, through the abdominal ostium. In my experience the uterine ostium is easily seen, and the catgut is then brought through it and out through the fundus of the uterus, or through the anterior wall near the fundus, the needle being directed first towards the uterine cavity (see Fig. 3); the end of the catgut is left long and is

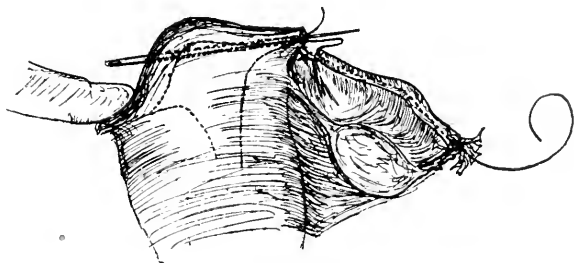


Fig. 3.

tied to the distal end, which is protruding through the abdominal ostium. With a minute needle loaded with double O catgut the tube is then united by interrupted stitches to the uterus (see Fig. 4). The prognosis for the cure of sterility in this class of case is not good, but during the last six months two cases have reported themselves pregnant after operation of this kind on the tubes.

It has been suggested to me by Dr. Tweedy that an opening might be gouged with a cork gouge from the uterine ostium

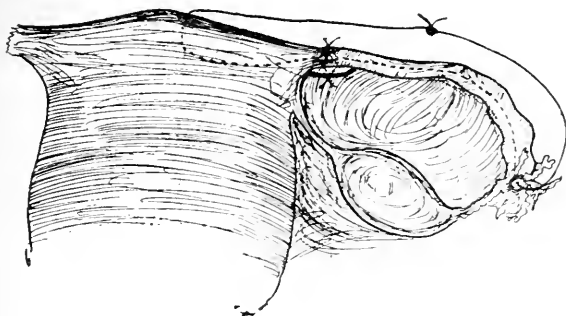


Fig. 4.

into the uterine cavity, and that the remaining portion of the tube might be drawn through into the cavity. The difficulty in performing this manipulation is well nigh insurmountable. Unless the uterus is bisected at the fundus, or unless an assistant holding in the uterine cavity *per vaginam* a plugging forceps ready to catch the tube, the chance of a successful issue in this manœuvre seems small. I feel satisfied that at the moment, the way which I have described is probably the best to hand, but it is only by pioneer experiments, such as suggested by Tweedy, that better results will be attained. It is to be hoped that some improvement in technique will be forthcoming, but I have tried different types of needles and other instruments and still feel that the percentage of success in this difficult class of case will not be large.

(b) When the involvement is in the isthmus the treatment depends on the portion of the isthmus; if somewhere near the ampulla it is best in most cases to remove the ampulla with the diseased portion, to oversew the edges and to insert strands of catgut in the lumen; from four to eight strands generally fit in. If the blockage is somewhere about the centre, or nearer to the uterine ostium, the diseased portion should be removed and then end to end anastomosis made. This is best carried out by passing catgut from one cut surface to the other by means of a straight needle and stitching the ends together by interrupted catgut suture. Although cases of tubal pregnancy have been reported with this technique, full-term pregnancy has also resulted.

(c) When the ampulla is involved it is necessary to remove

it with the fimbriated extremity, oversee the edges, and insert catgut as already described.

(4) One tube normal, the other diseased.

Whatever be the type of tubal disease, if one side is healthy little advantage will be gained by plastic work on the tube of the opposite side, with one important exception. If the ovary on the side of the healthy tube be apparently unhealthy everything possible should be done to leave the tube of the other side patent, provided its ovary is normal. It may be asked why not always repair the tube? In performing operations where diseased portions of tubes are removed, it must always be remembered that where large portions of tube are left the apparently healthy tube may be diseased. This is a risk that will be encountered and must be taken. To sum up the treatment suggested in monolateral tubal disease: remove the diseased tube in its entirety unless its ovary is affected, when plastic operation should be carried out, if possible.

(5) In the last type, where a double hydrosalpinx or pyosalpinx is present the practice which I employ at present is as follows:—

For hydrosalpinx the fluid is milked out of the tube after puncturing at the abdominal ostium, if necessary; raw surfaces are oversewn and catgut inserted. There may be some risk of local peritonitis in this procedure, but this is absolutely overcome by a drain through the posterior fornix, as before suggested.

When double pyosalpinx is present the outlook with regard to the cure of sterility is grave; this can nearly always be diagnosed before operation, so that if no symptoms other than sterility are present the operation need not be done. However, some cases apparently hopeless to bimanual examination are found on laparotomy to be more hopeful, and it is often found that when a large pus tube has been taken away a goodly-sized portion of tube still remains, which can be oversewn and may ultimately serve as the passage for a fertilised ovum.

I have thought it possible, but I have not yet found a suitable case to try a method of combating tubal sterility which might prove to be most effective. Sometimes when a tube has been blown up with air it assumes a large calibre.

Why not remove a small piece of functioning ovary and implant it in the lumen of the inflated tube ? The sow is a very fertile animal and her ovary is in her tube. Why not follow her example ?

In conclusion, tubal disease may be regarded as the most common and most overlooked cause of sterility. It is a cause sometimes extremely difficult to cure, but the fact that it exists so frequently makes laparotomy a *sine qua non* in the operative treatment.

Richelieu said : " In the lexicon of youth that aspires to a bright manhood there is no such word as fail." By perseverance we shall achieve further success in curing sterility.

A SIMPLE METHOD OF TREATING SUPERFICIAL LESIONS OF THE PERINÆUM AND INTRA-PELVIC CONDITIONS FROM BELOW.

BY MAURICE R. J. HAYES.

IT is not so simple as it would on first consideration appear to be to obtain ready access to the perinæum, and at the same time to place the patient in a position of comfort on the couch without risk of the high tension current sparking to the limbs.

When the patient lies on one or other side with the thighs flexed on the abdomen, the buttocks are not separated sufficiently to make access easy, and with all types of tube stands the tube terminals lie too close to the limbs, or to the top of the couch, to facilitate accurate focusing.

There is no danger of sparking to the body if the patient lie prone, but as in this position the limbs are fully extended, and the buttocks are in close contact, obvious difficulties are apparent, not the least of which is respiratory embarrassment, more especially with elderly patients. No doubt the perianal region is accessible for the treatment of pruritis ani, but because the lower limbs lie so closely together it is impossible to irradiate the perinæum satisfactorily if there be associated eczema of this part.

The recumbent position with the limbs apart is suitable for the treatment of pruritus vulvæ, etc., but here again the perinæum, which may require treatment, can be reached only with difficulty, and the *perianal* region is inaccessible.

With most types of tube stands there is little danger of "shorting" to the patient's body if we employ the Trendelenburg position, but here also difficulties are confronted. This is a very uncomfortable position, more especially for those whose joints are stiff, as is frequently the case with elderly patients. In my experience males find the Trendelenburg position intolerable.

Doubtless other radiologists have experienced similar

difficulties in treating this region, but I have found the following solution of it to be so simple and so satisfactory that it appears to me to be worthy of note. It consists of an ordinary board fashioned like a lavatory seat, but having a circular opening four inches in diameter, which I place across the end of the frame of my radiographic couch, the top of which latter can be easily lifted off. The couch I use is the War Office pattern universal *x*-ray couch, supplied by the Medical Supply Association. In this couch the tube box has longitudinal, transverse, vertical and rotary movements, with simple devices for carrying filters, lead glass nozzles of various sizes, and a pastille holder, and it is capable of very easy adjustment in all directions.

When the patient is seated, the anal region, the perinæum, or the vulva may be readily exposed. There is no risk of sparking to the patient's limbs, and there is no discomfort. A small opening in the seat is essential because it helps to keep the buttocks separated.

This position is so comfortable for the patient, and so simple and satisfactory in the treatment of superficial lesions of this region, and also of the deeper intra-pelvic conditions such as myomata, carcinoma, and enlarged prostate, that I am encouraged to describe it for the benefit of others who may possibly have had to encounter difficulties like mine.

I venture to suggest that manufacturers might with advantage consider the advisability of fitting a bevelled circular detachable piece into the tops of their couches at one end to serve the purpose which I have described. This would obviate the necessity of removing the top of the couch.

The accompanying photographs of my adaption will illustrate the idea.

[Owing to the postal strike the engravings which should have illustrated this article have not been received].

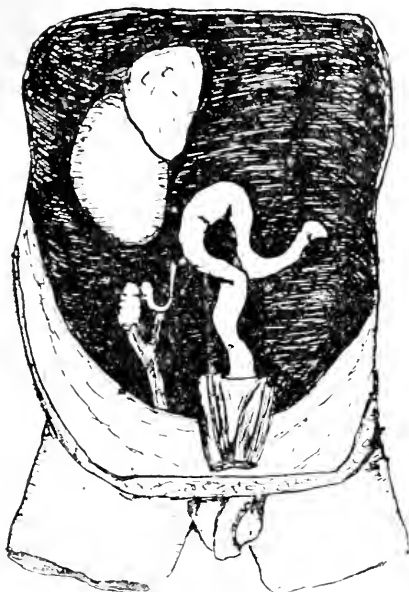


Fig. 1.

Fig. 1.—The gubernaculum is seen to fork, the lateral limb passing to the body of the testis, the medial to the tail of the epididymis and to the proximal part of the vas. (*From a foetus in the Royal College of Surgeons, Ireland.*)

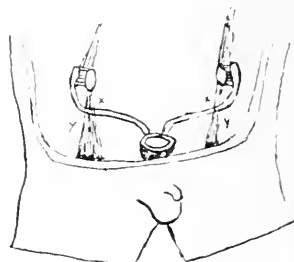


Fig. 1a.

Fig. 1a (*after Keith*) shows a more usual arrangement, the proximal portion of the vas lies *lateral* to the testis and then takes the course indicated so that there is a part of the gubernaculum (x) above the vas and a part (y) below it; x is homologous with the ligament of the ovary, and y with the round ligament of the uterus.

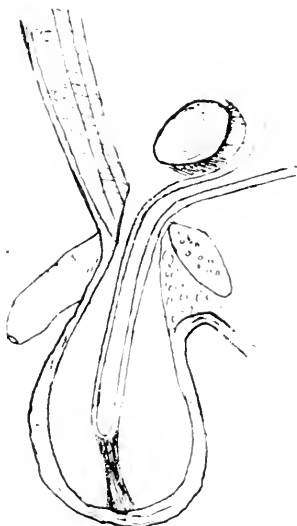


Fig. 2.

Descent of vas with arrested descent of testis.

DESCENT OF THE SPERMATIC CORD WITH IMPERFECT DESCENT OF THE TESTICLE.

BY ARNOLD K. HENRY.

ALTHOUGH in man as a rule the testis ends its journey in the scrotum, yet exceptions to this customary termination are commonplace. The distal attachments of the gubernaculum trace out alternative routes for the gland so that usually it has four potential destinations, and if it fails to reach the scrotum may come to rest in the perineum, the thigh, or near the pubic symphysis.

The proximal moorings of the gubernaculum, however, admit of variations in descent which have been less noticed. The gubernaculum is not attached merely to the body of the testis, but sends fibres to the epididymis and to the vas deferens, an arrangement which is well shown in a specimen preserved in the Anatomical Department of the Royal College of Surgeons in Ireland (see Fig. 1).

Thus the anatomy of the gubernaculum and the not infrequent caprice of development admit not only of variations in the route of the testis, but make it possible that the travelling gland may reach its destination with or without its belongings, in the shape of epididymis and vas; or that these, going in advance, may arrive safely in the scrotum while the testis remains behind.

The last event is, I believe, a not uncommon one. Within the last two years I have seen four patients in whom the body of the testis had failed to descend beyond the inguinal canal, while a structure giving the characteristic whipcord sensation of the vas deferens could be rolled between finger and thumb within the scrotum. I had, however, no opportunity of examining this anomaly at operation, but I am indebted to Mr. Adams McConnell for the accompanying sketch of a condition which he since discovered during an intervention for incompletely descended testis (Fig. 2). The body of the testis in this case was arrested in the inguinal

canal, and was surrounded by a closed serous sac. The epididymis was attached to the body by a loose mesentery, and from the globus minor of the epididymis the vas deferens passed to the bottom of the scrotum and was there anchored by a fibrous band, which presumably was the remains of the gubernaculum.

I first met with the condition in a pensioner aged 29, seen on July 9, 1920, with a right inguinal swelling which had been diagnosed as a hernia. No hernial protrusion was present, but there was a slight impulse on coughing at the external ring. The inguinal swelling on the right side was of the same size as the left testis which had descended normally; on pressure it gave definite testicular sensation. The right side of the scrotum, however, was not empty but contained a thin bundle which descended to a small body about the size of an haricot bean. In this bundle the vas could easily be felt. The small body had apparently been mistaken for an atrophied testis, but though at the time I was unaware that descent of the spermatic cord with imperfect descent of the testis had been recorded, I was confident that only the cord had descended in this case. Curiously, on the next day I met with a similar condition in an older subject, which I was able to demonstrate to my colleagues on the medical board.

In this instance it was associated with an inguinal hernia and the cord was thicker than in the first patient. The abdominal wall, too, was much more flaccid than in the younger man, and the body of the testis could be definitely palpated in the inguinal canal, giving a sensation on pressure which the patient recognised as testicular. Nothing corresponding to an epididymis could be felt in the vicinity of the testis, though if a normal epididymis had been present it could undoubtedly have been defined through the lax tissues. At the time I believed that the epididymis had been drawn away from the testis into the scrotum, and becoming elongated under traction, had accounted for the bean-like structure which I took to be the globus minor. With the exception of this last conjecture regarding the globus minor my diagnosis received striking support in every detail from a case re-described by W. G. Spencer in *Medical Science, Abstracts*

and *Reviews*, August, 1920, p. 439,* which I venture to quote with the introduction of italics.

"A man aged 21 presented what at first sight appeared to be a left congenital hernia with a very atrophied testis. On more careful examination *the supposed testis proved to be a loop of the vas deferens*. On exposure through an incision a patent funicular process of the tunica vaginalis was traced up through a normal inguinal canal, but there was no hernia of the abdominal contents. In the wall of the sac was the vas deferens of normal size. Traced downwards, it was found to be sharply reflected and was continued upwards as a tortuous tube formed by *an unravelled epididymis* about half the thickness of the vas. *This ended in a testis lying just within the abdominal ring*. The testis was rather more than half the size of the right, softer, and without a normal epididymis. At the angle made by the loop of the vas was attached a band of white fibrous tissue, about two inches in length, representing the gubernaculum testis. Its other end was continuous with the dartos, so that as the band was drawn upwards, the scrotum at the point of attachment followed and was drawn inwards."

What I had taken to be the globus minor in my first two cases was quite possibly the loop of the vas which Spencer describes, but it will be remembered that the convoluted canal which is the main component of the epididymis is some twenty feet long; it thus admits of much unravelling and variety of descent.

The two other cases with this condition were similar to those which I have related, except that in one the testis was retained within the abdomen, and could be located in the iliac fossa.

It may be noted here that the pulling down by the gubernaculum of a loop of the vas deferens sets the stage for a catastrophe which so far, I believe, has only once been recorded. McConnell, in 1911, at the Royal Academy of Medicine in Ireland, described a case of volvulus of the spermatic cord, in which a loop of the cord was twisted twice upon itself.

*Spencer's original paper was published in *Trans. Clinical Soc., London*, 1905, 38, p 246.

Sir A. Keith and Going, in 1906, suggested that in the much commoner event of torsion of the cord, the gubernaculum fails to seize the body of the testis but fastens upon the globus minor of the epididymis or upon the vas, pulling them down and elongating the common genital mesentery which binds them to the abdominal wall. The gland thus lags behind, and may or may not reach the scrotum. In any event, the long mesentery renders the testis, which is normally sessile, liable to torsion, and this may occur at any point of the testicular path.

In conclusion then, it may be said that descent of the spermatic cord into the scrotum associated with imperfect descent of the testis is probably of quite common occurrence; the gubernaculum like a call-boy neglects to call the principal actor, and the play is left without Hamlet. The presence of this condition may however be masked by finding a small body in the scrotum which is mistaken for an atrophic testis. If the undescended testis is in the abdominal cavity, as it was in one of my cases, the delusion is complete: there is then no tender lump in the groin and the observer's suspicion is not awakened by the apparent presence of three testicles. Careful examination, however, may reveal the fact that the small body in the scrotum is not the testis.

Besides its infertility and the menace of torsion, Osler and others have emphasised the tendency of the undescended testis to become the seat of a virulent malignant process, which when the testis is intra-abdominal is usually recognised too late. It is important, therefore, to be aware of any pitfall which may prevent the recognition of this error of development.

References :

- A. Keith and Going: *Lancet*, 1906, i, 370.
- A. A. McConnell. *Lancet*, 1912, i, 1055
- W. Osler, *Lancet*, 1907, i, 1409.
- W. G. Spencer, *Trans. Clin. Soc.*, London, 1905, 38, 246.

A CASE OF TUBERCULOSIS OF THE UTERUS.*

BY BETHE⁴ SOLOMONS and J. H. POLLOCK. *re case of myoma*

MISS N, aged 49, enjoyed good health until nine years ago when her periods commenced to become heavy.

From that time until the date of operation the periods varied from two or three days to eight or nine days. She complained of bilateral pain for the past year which had been increasing in severity. During the weeks previous to admission into ~~Mercer's~~ hospital there had been continued hæmorrhage. She had noticed a loss of flesh.

There was nothing significant in the family history. On examination the patient was an anæmic, cadaverous woman. The temperature was 99-100, pulse 84-102 for three days before admission.

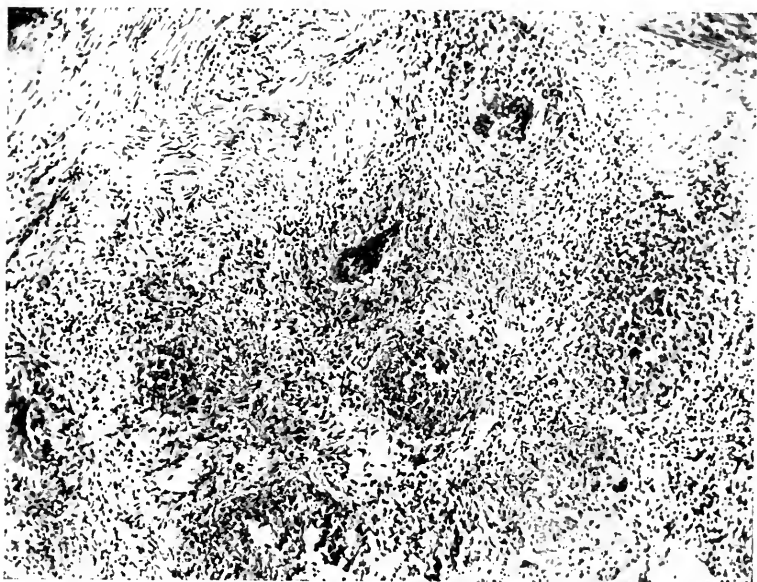
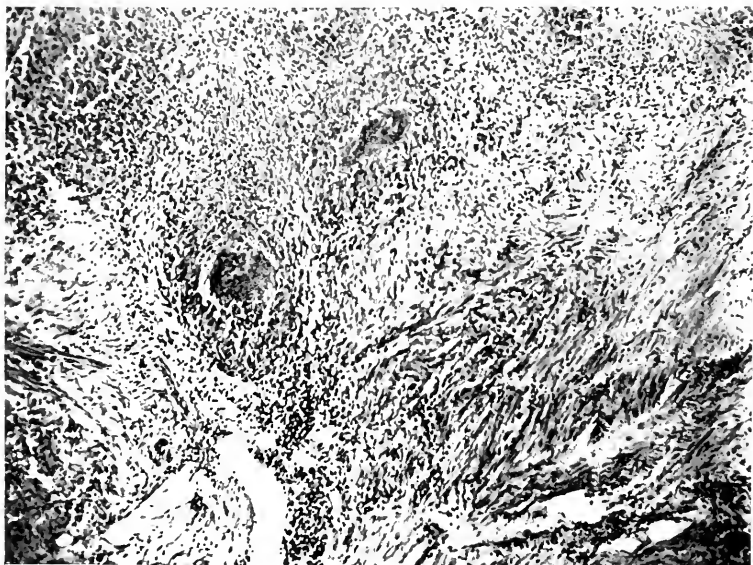
Bimanual examination revealed an enlarged uterus, and the diagnosis was made of myoma undergoing degeneration.

The operation consisted of hysterectomy with removal of both tubes and ovaries.

The convalescence was satisfactory.

Upon hemisection, the uterus was found to be increased in size, but the cavity to be diminished. At first sight the appearance ~~might~~ suggest an interstitial fibro-myoma, with small areas of necrosis. The necrotic areas however contained an unusually fluid material, which left small suggestive cavities upon evacuation. Smears were made from this fluid and stained for tubercle bacilli; two were found after prolonged examination. Paraffin sections from the solid area showed giant cell formation, epithelial cell proliferation, and lymphocytic immigration. The entire cut surface of the uterus shows a marbled appearance due to areas of necrosis alternating with non-necrotic

*Shown at the Section of Obstetrics, Royal Academy of Medicine in Ireland, May 19, 1922.



portions. ~~The~~ The condition is evidently mostly chronic, with complete and coalescent involvement of the organ.

Clifford White reports that the body of the uterus is involved in 85 per cent. of cases of uterine tuberculosis, the cervix in 2 per cent.; in the remainder both are affected. He states that the uterus is the genital organ most frequently attacked in women.

Two classes are described—the acute miliary and the chronic; the latter is most common. It is a pity that White in giving his percentage rate did not give the number of cases, for in the experience of one of us (B.S.) and of many gynæcologists including that of Frankl, the condition is extremely rare.

The micro-photographs shown were most kindly made by Dr. J. T. Wigham, at the Pathological Laboratory, Dublin University, from our original microscopical preparations. (*See plates*).

BOOKS.

THIS MONTH'S SPECIAL REVIEWS.

The Mental Hygiene of Childhood. By WILLIAM A. WHITE, M.D. W. Heinemann, London, 1919. Pp. xi, 193.

THERE are a limited number of men and women endowed with real unselfishness and the gift of remembrance. When they reach adult life, the atmosphere of childhood does not pass away, and so they can enter into the life and thoughts of a child with true understanding, and without imaginative effort. Among such are to be found the "born parents, born teachers and born nurses" of this world. They are, alas, very rare! The average good-hearted, thoughtless individual is about as fitted for the "bringing up" of children as he is for the navigation of a cruiser or the training of a race-horse. This is a fact which is only now becoming recognised by the general public; a fact, the importance of which can scarcely be over-estimated, where the welfare of coming generations is concerned.

In this excellent little book, *The Mental Hygiene of Children*, Dr. W. A. White has supplied a very real need; he has presented us with a volume based on his own wide experience, in which child nature is surveyed from a new and unusual standpoint, and certain important principles hitherto little recognised, have been propounded and emphasised.

It is, moreover, a book which strikes a distinctly hopeful note, in that the gloomy doctrine of hereditary sin is given a back seat, and the influence of early training and environment is dwelt on with stimulating insistence. Doctors, teachers and parents alike, will find in its pages much that is helpful, interesting and suggestive.

D.K.M.H.

The Prospective Mother. By J. MORRIS SOLOMONS, M.D. Second Edition. D. Appleton and Co., London, 1921. Pp. ix, 343. Price 9s.

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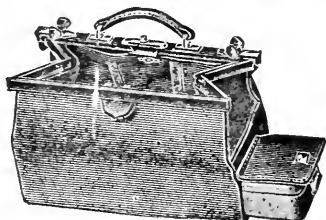
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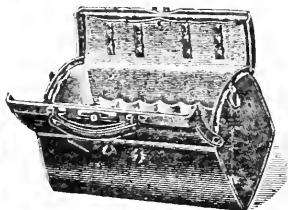


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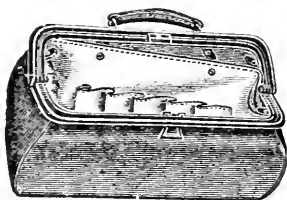


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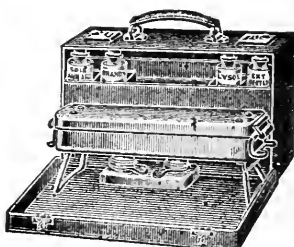
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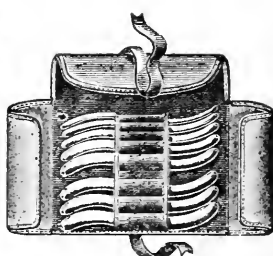


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knowledge of medicine, but take an intelligent interest in the series of phenomena which occur in themselves during the course of pregnancy.

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The physiology and much of the pathology of pregnancy is dealt with; and a great deal of valuable practical information is supplied.

We ourselves would hesitate to put the book into the hands of an intelligent patient during the course of her pregnancy. There is very much in it that she may learn at that time with great benefit and comfort to herself, but we think that subjects such as embryology, the use of forceps, or the management of a breech presentation, should not be dwelt on during those fateful nine months, but rather studied aloofly, at some other time, when they do not hold such vivid personal significance. In the author's own words, "anxiety, and other types of mental uneasiness not only magnify the discomfort (vomiting) but sometimes are its sole cause."

Undoubtedly, however, the book is stored with knowledge as valuable as it is varied, and to midwives, nurses and students it should be a most useful and interesting asset.

Index of Treatment. Edited by ROBERT HUTCHISON, F.R.C.P. and JAMES SHERREN, F.R.C.S. Eighth Edition. John Wright and Sons, Bristol. Pp. xviii + 1021.

A BOOK of reference is tested by long acquaintance, and if this include a period of solitary companionship, it is tried indeed. It was our very good fortune to subject an earlier edition of this *Index* to the complete ordeal, treating others and being treated ourselves from its pages when no other volume was available. The reputation of the book is already well established, and praise of its eighth edition is superfluous. The type has been improved, and many articles including those on neurasthenia and hysteria have been entirely rewritten. These are very practical, and include short and clear statements with regard to pathogeny, without which, in the present state of knowledge they would be valueless.

New articles have been added on encephalitis, blood transfusion, and the surgical treatment of constipation.

In a future edition it might perhaps be possible to include bibliographical references, especially where some treatment is mentioned which appears to hold promise, but which is too recent to have yet established its worth.

Diseases of the Digestive Organs, with Special Reference to their Diagnosis and Treatment. By CHARLES D. AARON, Professor of Gastroenterology and Dietetics in the Detroit College of Medicine and Surgery. 3rd Edition. H. K. Lewis and Co., Ltd., London, 1921.

THE second edition of this work, which appeared in 1918, came into the hands of the present reviewer, and the favourable opinion then expressed is confirmed by the appearance three years later of the third edition which is the subject of the present notice. The volume differs from many others in that it deals with the diseases of the entire digestive tract, including not merely the mouth, stomach and intestines but also the digestive glands. It is possible in consequence for the student to obtain a more comprehensive and unified view of the entire subject by perusal of this book, than can be obtained by reading a series of separate monographs, each dealing with only a part of the alimentary system. Special attention is given to the different methods of examination, the text being illustrated throughout by excellent drawings, and photographs representing various tests and apparatus employed. The importance of the duodenal test for examination of the duodenal contents is fully recognised; and also the necessity of detailed examination of the fæces after the ingestion of test meals.

The author, who is himself a practical physician, also realises that as far as the patient is concerned, treatment following on and based on accurate diagnosis is all important, devotes much of his space to a systematic consideration of therapeutics. The result is that the book is not too much overburdened with pathological theory, and will therefore appeal to the man who wants help and guidance in dealing with his patients. The present edition is up-to-date; it is of handier

size than its immediate predecessor; and in short, can be cordially recommended.

Lectures on the Surgery of the Stomach and Duodenum. By JAMES SHERREN, C.B.E., F.R.C.S. H. K. Lewis, London, 1921. Pp. 96.

THIS little book comprising lectures to students of the London Hospital, is based largely upon the author's operative experience, and is thus of value to physicians and surgeons who have the intelligence to be students. It is another example of the gifts which the operator, by the study of living pathology makes to medicine. The first chapter gives an interesting summary of present knowledge regarding the etiology of gastric ulcer. The author agrees with Moynihan that, apart from seeing the ulcer during operation, the only certain sign of chronic ulceration is the finding of a definite picture on *x-ray* examination. Statistics of medical treatment of gastric ulcers unverified by radiography are quite worthless.

We are glad to note that Mr. Sherren discounts the value of epigastric hyperalgesia. We have been amazingly disappointed in the majority of cases in which we have sought to confirm the findings of Sir James Mackenzie in regard to phenomena of hyperaesthesia in other conditions..

We note that the author has been performing partial gastrectomy for the last ten years "for adherent and perforating ulcers, and all in which there is any suspicion of carcinoma, which include all cases of large indurated ulcers." In 90 cases of hour-glass stomach he has performed this operation 59 times. Other chapters deal with the duodenal ulcers, stenosis of the pylorus, and gastric carcinoma. The difficulty of diagnosing this last condition from affections of the gall bladder and from chronic appendicitis is emphasised. The futility of the ordinary test meal is in evidence throughout the book.

Practical Psycho-Analysis. By H. SOMERVILLE. Balliere, Tindall and Cox. London, 1922. Pp. vii + 142.

THIS book is intended as an introduction to psycho-analysis.

The author is at his best when he uses examples to illustrate his meaning. His chapter, for instance, upon unconscious mental functioning is excellent, as are those dealing with the Oedipus complex, sexual evolution, homosexuality and symbolism. The first chapter is a lecture by the author which has been pressed into service; it should be written afresh to compare favourably with those which follow it.

The beginner, warmed by the earlier chapters will finish that entitled "Hints on how to do a psycho-analysis" with a sense of being left a little in the lurch, but this is inevitable in any small work upon a vast subject.

The Surgical Treatment of Non-Malignant Affections of the Stomach. By CHARLES G. CUMSTON, M.D., and GEORGES PATRY, M.D. Wm. Heinemann, London, 1921. Pp. x + 349.

THIS book represents "the combined experience of an American surgeon well versed in continental methods and a Continental surgeon fully conversant with Anglo-Saxon surgery and practice." It is, as its authors claim, a piece of international team work, and they write from a large operative experience; they appear to have thoroughly tested the majority of the great number of alternative procedures which they describe.

The chapter on gastro-enterostomy gives a most interesting historical survey of an invaluable operation which has been sadly misused. It is noteworthy that some of the early failures in the hands of great surgeons were due to ignorance of what is now elementary anatomy; the highest loop of small intestine that presented was used for anastomosis and this not infrequently proved to be the ileum.

The chapter entitled "Pulmonary Complications and Operative Shock" has eleven lines on the former condition, noting its occurrence, while the rest of the chapter deals with the problem of reducing the time of operative manipulation by mechanical aids.

Petersen, who with his chief, Czerny, was responsible for popularising the short-loop operation in gastro-jejunostomy, regards the use of Murphy's button as a method of choice.

The authors find upon consideration of statistics, that the disadvantages attributed to the use of buttons occur as frequently when sutures are used. They prefer sutures, however, (1) When time does not press. (2) In any gastric resection, except "Billroth II." (3) When there is danger of a drag upon the anastomosis. The position of the authors regarding the treatment of gastric ulcer may briefly be summarised as follows:—Recent ulcers without predominance of any particular symptom should be treated medically for two months. If they resist treatment they are considered chronic, and require surgical intervention. A predominant symptom indicates operation. except in cases of *acute hæmorrhage*, where medical treatment should be employed *if the hand does not feel gastric peristalsis indicating pyloric stenosis*: hæmorrhage with stenosis will only be checked by operation. Gastric ulcer "is an episode of a morbid process which involves the entire stomach." Operation, therefore, should aim at (1) Removing the ulcer. (2) Altering the physiology of the stomach as regards (a) motility and (b) acidity. Thus, the *logical* operation is pylorotomy, with gastro-enterostomy to secure alkalisation by the reflux of bile and pancreatic juice through the stoma. In practice, however, pylorotomy is a lengthy procedure and excellent results are secured by gastro-jejunostomy combined with pyloric exclusion, though admittedly this does not guard so effectively against cancerous change. Pyloric exclusion prevents closure of the stoma and the return of gastric hyperacidity. The etiology of gastric ulcer is still obscure, but the vicious circle of spasm stasis and hyperchlorhydria is strongly emphasised by the authors in their closely reasoned pages.

Other chapters deal with treatment of gastric dystopias, gastric tuberculosis and syphilis, and disturbances of secretion.

The outlook everywhere is broad and critical. We look forward to further editions of this most valuable book.

A Pocket Surgery. By DUNCAN FITZWILLIAMS ARNOLD.
London. Pp. 348.

IN this little book the outlines of surgery are given briefly

and concisely. It contains the headings and classifications which are so necessary for examination purposes.

In the preface the author says: "*The Pocket Surgery* attempts to give all the necessary headings and only a very short account of the mere details which the student should have learned elsewhere"; and also: "Here we only try to supply the key to the cupboard in the student's brain, in which the mass of detail must be stored."

When used in this way we are sure that the book will be found very useful, but, without the help of a work of reference, its scanty explanations must lead to disaster if the student's brain does not contain that "mass of detail." A.B.C.

Manual of Surgery. THOMSON and MILES. Oxford Medical Publications.

THE fact that this book is now in its sixth edition, speaks well for the popularity which it has enjoyed amongst students. The fifth edition was issued in 1915, and there was a second impression in 1919.

The outstanding difference between this and the previous editions is that the manual is now published in three, instead of two volumes. One volume deals with general surgery, another with the extremities, head and neck, and the third with the thorax and abdomen. This change was clearly for the better, for in the fifth edition we found dislocations and fractures of individual joints and bones at the end of the volume on general surgery. Thus they were separated widely from deformities of the extremities which were in the volume on regional surgery.

Among the additions to the book is a page devoted to mobility of the ascending colon, and to the mechanical causes of its symptoms. The treatments recommended are cæcopexy, cæcoplication and cæcectomy. Abdominal belts and colopexy are not mentioned. As war surgery is considered of little use to the civilian practitioner, only its broadest principles are included. Both the Basle anatomical nomenclature and the old terminology are used.

This edition is well printed and bound, and the six hundred odd illustrations should assist the text in forming clear clinical pictures. A.B.C.

Heart Disease and Pregnancy. By SIR JAMES MACKENZIE.
Pp. 138. Illustrations 21. London: Henry Frowde and
Hodder and Stoughton.

THE question of heart disease and pregnancy is of such obvious importance to both physician and obstetrician that it is difficult to understand the scantiness of the literature on the subject. Indeed, for many writers the views propounded by Angus MacDonald in 1878 would seem to have remained a standard. One welcomes, therefore, the appearance on the subject of an authoritative contribution, based on modern conceptions.

Mackenzie holds that a valve lesion *per se* is no contra-indication to pregnancy. The fundamental question is the presence or absence of heart failure, as evidenced by limitation of the response to effort, by palpitation, and particularly by persistent crepitations at the bases of the lungs. Of the valve lesions, the most serious is mitral stenosis. Where *this* lesion is found, Mackenzie holds that the outlook is good where there are no symptoms of heart failure, and where the murmur is still presystolic ten or fifteen years after the causative rheumatic attack. When there is a diastolic murmur the outlook is less favourable, especially if there is evidence of heart failure. In cases of auricular fibrillation, pregnancy should be forbidden. In aortic regurgitation, if the heart is normal in size and the response to effort good, pregnancy may be undertaken. If, on the other hand, the ventricle is much hypertrophied and there is a marked Corrigan pulse, the probability is, that the patient will be severely crippled, even if she gets over her pregnancy.

The question of auricular fibrillation in its bearing on pregnancy requires more investigation. As an appreciable number of patients with auricular fibrillation are almost unembarrassed by the irregularity, it seems hazardous to make of fibrillation a definite contra-indication to pregnancy. In this connection it is interesting to note a statement by Calvin Smith in a current issue of the *Journal of the A.M.A.* to the effect that many of his patients suffering from auricular fibrillation have passed through a sixth pregnancy, apparently none the worse. Exception will also be taken by many physicians to the stress laid on the time of the murmur in mitral stenosis as a criterion.

Much of the material in this book is contained in Mackenzie's earlier works. However, as the monograph is intended primarily for obstetricians who are presumably unacquainted with much that is new in the domain of cardiology, we cannot take exception to this arrangement. One may hope that a stimulus will be afforded by the work to further research, and that the subject will in the future attract the attention which it merits.

L.A.

The Clinical Study of the Early Symptoms and Treatment of Circulatory Disease in General Practice. By R. M. WILSON. London: Henry Frowde and Hodder and Stoughton, 1921. Pp. 245. III Illustrations.

THE book commences with a foreword by Sir James Mackenzie. We are then introduced to the author's main hypothesis, namely, that the vagus and the sympathetic exercise a continuous reciprocal action on each other. Thus, stimulation of the vagus may lead to reflex stimulation of the sympathetic, the end result being a quickening of the pulse, not a slowing. A quick pulse may thus be an expression of increased vagal tone.

This hypothesis is introduced into the conception of manifold morbid states and symptoms. Thus, exhaustion, breathlessness, cyanosis, pain, fever, and many similar conditions are all held to be due to disturbance of vagus or sympathetic activity. Such disturbance is brought about principally by the presence of toxins, and by mechanical abnormalities such as enteroptosis, perineal tears, etc.

It is astonishing to note how much the author has woven around his central theme. It is still more astonishing to find, that in spite of his laboured ingenuity, we have learned but little of practical value about the early symptoms and treatment of circulatory disease in general practice.

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ABSTRACTS OF CURRENT LITERATURE.

MEDICINE.

GAUTIER, P. (Geneva). *L'Endocardite à Marche Lente*. "Rev. Méd. de la Suisse Romande." June, 1922.

Classical authors spoke but little of subacute endocarditis, which they referred to occasionally under the name "febris pallida." Nevertheless, attention has been drawn to this disease for some considerable time, though it was only in 1885 that it was first clearly differentiated by Osler.

Whilst subacute endocarditis is not common, it is nevertheless far from rare, and many authors have observed numerous cases. It attacks mainly adolescents and young adults. Almost all the patients attacked have an antecedent history of acute rheumatism followed by an endocarditis and by a lesion usually of the mitral valve. Closely preceding the attack we find a history of tonsillitis, bronchitis, luecal, sepsis, etc.

The disease begins insidiously with anæmia, debility, fever, joint and muscle pains. The joints may be red and swollen. After a time we get characteristic symptoms such as purpura, Osler's nodes, splenomegaly; a systolic murmur—usually mitral; tachycardia with for a long time little evidence of disturbed cardiac function; positive blood culture. Other symptoms are embolism; toxic or hæmorrhagic retinitis; renal troubles with subacute or chronic nephritis.

The evolution of the malady is slow and irregular. The temperature varies considerably, chills and sweats are frequent. Cutaneous eruptions and joint manifestations may alternate or occur simultaneously. Exacerbations alternate with apparent remissions but the general trend is steadily downwards, and the patient invariably dies, in from four months to two years.

A number of forms have been recognised. Thus we have an apyrexial form, in which there is but an occasional and short rise of temperature; we have the anæmic form, with intense, often pernicious anæmia; we have the hæmorrhagic form; the pseudo-malarial form; the painful form, in which the pain is associated with multiple subcutaneous embolisms; the latent form; the nervous and meningitic forms.

It is interesting to note that numerous cases of the disease have occurred in infants. The youngest patients were five years of age. The evolution is the same as in the adult.

The causative agent is a streptococcus which may or may not belong to a special group known as "streptococcus viridans."

The differential diagnosis is difficult. The disease with which it is most confounded is a recurrent attack of acute rheumatism; other

diseases for which it may be mistaken are typhoid fever, malaria, chlorosis, pernicious anæmia, miliary tuberculosis, etc.

The author concludes by pointing out the inefficiency of treatment, in spite of the host of agents employed.

L. A. ABRAHAMSON.

AMEVILLE, M.P. *Limitations and Fallacies of Pulmonary Auscultation*. "Priesse Méd." March 11, 1922.

The author arranges his criticisms under four heads, the first two of which correspond to conditions essential to the production of sounds audible with a stethoscope.

I. *The Law of Minimal Volume*.—"A lesion will give rise to audible sounds only if it be of sufficient extent."

Autopsy often reveals lesions close to the costal surface of the lung which were not discovered by auscultation during life. The minimal volume of a lesion necessary to produce pathological sounds varies greatly. A pulmonary lesion may modify the sounds heard by the the stethoscope in three ways only: (a) it may diminish or suppress the vesicular murmur; (b) it may transmit to the auscultated surface the so-called "bronchial" breath-sound, which is really the laryngo-tracheal bruit. Every modification either in tone or timbre of the respiratory sounds is due to either (a) or (b). (c) The lesion may give rise to bubbling râles which in all probability are due to the collision of fluids, produced by the lesion, with the gases moving in the airways.

If these statements are accepted, it will be seen that a lesion may be too small to transmit the laryngo-tracheal sound to the ear. This sound is not transmitted so long as a sufficient number of adjoining vesicles remain permeable to air. Again, since the stethoscope placed over a small lesion collects sounds from an area which is more extensive than the lesion, the vesicular bruit in this area may mask the auscultatory signs. A bubbling râle is the only variety of sound which can in the circumstances be heard, so that until a small pulmonary lesion gives rise to bubbling râles it is liable to be missed.

II. *The Law of Maximum Depth*.—Sounds from a pulmonary lesion separated from the ear by too great a thickness of lung or of soft tissues are inaudible. The presence of a sufficient number of freely aerated alveoli peripheral to the lesion may mask it completely, as may a fat or muscular thoracic wall. A diagram of a cross section of the shoulder region shows how very limited is the utility of the stethoscope in the upper thorax.

III. *Pathological Sounds in the Lungs as in the Heart, may be heard at Points which do not Correspond to the Position of the Lesion*. This fact was most clearly demonstrated by Tuffier on the operating table, in 1895. (a) Transmission may be homolateral; lesions, for example close to the interlobular fissures are often best heard at the inner part of

the supraspinous fossa, which is a kind of a receiving station for sounds which originate in the upper lobes. (b) Contralateral transmission: this has been most frequently observed in children, and is probably due in some cases to the conduction of sounds through a solid mass of enlarged tracheo-bronchial glands, and in others to transmission of sound from a lesion through the bodies of the vertebrae.

IV. *The personal co-efficient*—This varies from moment to moment, and a little Eustachian catarrh and a wet day may influence a diagnosis. The use of radiography is strongly urged, it should no longer be considered a technique *de luxe*, but as essential as auscultation itself.

BURNAND R., and CARRARD R. *Fifty per Cent. of Tuberculous Cavities are Mute to Auscultation.* "Presse Méd." May 31, 1922.

THIS paper furnishes a complement to the foregoing. In a series of 121 tuberculous cases in which lung cavities were demonstrated by radiography, 65 failed to give the classical auscultatory signs of cavitation, and of these 16 were absolutely mute, while in 11 cases the only abnormal sounds audible were diminished breath sounds with occasional distant and muffled moist crepitations: in 8, rough breathing with a few dry crepitations: and in 7, diminished respiration with sibilant rhonchi.

The authors believe that while no strict rules can be formulated, cavities are difficult to recognise with the stethoscope (a) if they are deeply placed in the parenchyma; (b) if they are at the outer border of the lung in the shoulder region; (c) if their walls are sclerotic (these often give rise to ordinary tubular breathing). (d) Cavities with scanty secretion, without the betraying presence of bubbling râles. (e) The presence of bronchitic signs may lead to wrong diagnosis. These are suspicious when they are fixed and unilateral, and are accompanied by the expectoration of tubercle bacilli. (f) In aphonic cases with advanced laryngeal tuberculosis pulmonary lesions, including cavities, are often mute, since the laryngo-tracheal bruit is absent.

The authors admit that they are just emerging from the phase of surprise at the extreme frequency of mute cavities. They believe that cavitation may occur at a very early stage of the disease. The patients may be plump and florid. Further, cavities should be sought for in cases of 'arrested' phthisis.

LEVADITI C.: *Le Bismuth dans le Syphilis.* "Presse Méd." July 26, 1922.

BISMUTH was first used experimentally in 1889, by Balzer, in dogs, with a view to the treatment of syphilis in men. The results were discouraging; stomatitis and dysenteric symptoms were caused. In 1916 however, Sauton and Robert (*Ann. Instit Pasteur* 1916, t.xxx, p 261) showed the curative action of Sodium and potassium tartro-

bismuthate in the spirillosis of fowls. Levaditi, with Fournier and Guénot, has been using this drug since 1920 in the human subject. The effects of tartrobismuthate of sodium and potassium (T.B.S.P.) injected intra-muscularly, are summarised as follows:—

1.—*Action upon Chancre.* Spirochaetes disappear from the primary lesion sometimes on the day following injection, more often after the second injection. The accompanying glandular inflammation is rapidly resolved, and in a week spirochaetes cannot be recovered by puncture of the inguinal glands.

2.—*Action Upon Secondary and Tertiary Manifestations.* Secondary lesions also disappear within a week. Tertiary lesions often cicatrise in a month.

Parasyphilitic lesions appear to be but little influenced by bismuth, but several authors report cures in cases of acute syphilitic meningitis and inherited neurosyphilis. As bismuth has only been in use since 1920, it is too early yet to speak of the permanence of its effect. It is curious to note that while in some patients the Bordet-Wassermann reaction remains positive when bismuth therapy is in progress, it becomes negative soon after treatment has ceased. Relapses are a recognised event during treatment with mercury and arsenicals; they have not yet been seen in cases where bismuth has been employed. Further, while certain subjects have been found resistant to mercury and arsenic, no case has yet proved refractory to bismuth and the drug may be employed where others fail.

3.—*Toxicity.* The rabbit when injected subcutaneously with T.B.S.P. in alkaline solution tolerates a dose of 50 to 60 milligrams per kilogram of body weight. 100 milligrams per kilo produce emaciation; 200 are fatal. Intravenously the drug is much more toxic. Levaditi finds that a suspension of T.B.S.P. in olive oil is much less toxic than the alkaline solution, and he employs this suspension in 10 per cent. strength, under the name of "Trépol." This is given every three or four days intramuscularly in 2 c.c. doses (each containing 0.2 grams of the drug), until 2.8 or 3 grams. of the drug have been given. After a month's interval a second series is given, and so on until the Wassermann reaction remains negative.

The injected bismuth is very slowly absorbed; its presence has been demonstrated in the brain and cerebro-spinal fluid, liver, kidneys, spleen, in the saliva, sweat, urine; it persists in the urine for some three weeks after treatment has ceased.

While many bismuth compounds are intensely painful when injected, the oily suspension, trépol, causes no discomfort.

A few patients suffer from a slight rise of temperature and from asthenia after injection, but this last can be eliminated by properly spacing the injections. The mouth must be watched; septic teeth predispose to gingivitis, and a blue line on the gums is a warning that

injections are being made at intervals which are too short. The urine, too, must be constantly tested for albumen.

Local applications of trépol are prophylactic in rabbits inoculated experimentally. Levaditi and other writers have shown that it is the element bismuth which is the active agent in compounds of the metal, and Levaditi suggests that colloidal bismuth may displace trépol. He emphasises the fact that owing to the gradual absorption of the metal the patient's treatment continues long after the doctor has done with him.

CALVIN SMITH. *Observations on the Heart in Mothers and the New-born.*
"Jour. of the Amer. Med. Assoc." Vol 29, No. 1. July 1. 1922.

CALVIN SMITH has applied electro-cardiographic research to the study of the heart in the pregnant woman and in the child. The results are important and illuminating. Amongst the conclusions drawn by the author, are the following :—

1. Clinical, cardiographic and radiographic examinations indicate that pregnancy, in itself, does not cause cardiac enlargement.

2. Cardiac enlargement in the latter half of pregnancy can be simulated by the upward pressure which the gravid uterus exerts on the heart, causing cardiac displacement. This disappears in the upright position.

3. There are no heart affections which are characteristic of or incident to pregnancy.

4. Focal infections may cause symptoms of heart embarrassment in pregnant patients, which might erroneously be attributed to pregnancy.

5. Definite cardiac indications for the interruption of pregnancy are rare. Even frankly diseased heart will exhibit a surprising adaptability to the physiologic demands of pregnancy.

6. The right side of the heart is enlarged in the new-born. Evidence of cardiac enlargement persists for five weeks or longer, before the baby's electrocardiogram begins to assume adult characteristics.

7. The heart, following birth, is frequently irregular at intervals during the first week. Such irregularities may be expected to disappear at a later date, and are not indicative of cardiac pathology.

8. In a still-born baby, evidences of heart activities were observed for three hours and twenty-four minutes following stillbirth.

9. Massage of the heart through the chest wall may prove to be a useful adjunct to other methods of resuscitation in the stillborn.

[It is interesting to note in connection with the first two conclusions quoted above, that electro-cardiograms taken by us of three women at varying periods of pregnancy showed in two cases no abnormality, in a third preponderance of the right ventricle. All tracings were taken in the sitting position.]

LEONARD ABRAHAMSON.

LEWIS, T. *The Value of Quinidine in Cases of Auricular Fibrillation and Method of Studying the Clinical Reaction.* "Amer. Jour. of the Med. Sciences." June, 1922.

THIS is the first of a series of three articles delivered at the University of Oregon Medical School, Portland, in May, 1912.

In this article Lewis deals fully with the very important matter of dosage, and concludes that the doses and times of administration are best controlled by studying electro-cardiograms, obtained as treatment proceeds. The ideal procedure would seem to lie in the administration of doses which suffice to reduce the auricular rate to 300 or 250 per minute, and consistently to maintain it at this level. Whilst it is thus impossible to formulate any hard-and-fast rules, many cases respond to doses of four grms. of quinidine given three or four times daily.

The question of simultaneous digitalis therapy has aroused much speculation. Whilst many writers considered the combination of these drugs highly injudicious, Lewis holds that the antagonistic action has been exaggerated. He believes that in cases with high ventricular rhythm the administration of digitalis is advantageous, in spite of the fact that it may be necessary to give rather larger doses of quinidine under these circumstances.

The adverse effects of the drug are dealt with. One of the most significant in the supervention of tachycardia, which may be associated with a fall in the auricular rate. The development of auricular rates below 250 per minute appear to contra-indicate further dosage, if the rate of the ventricle has already risen much over 100. The danger of embolism is a real one. Lewis holds that where there is much dilatation of the heart the use of the drug is contra-indicated, and where there has been evidence of recent embolism its use invites disaster. Provided the cases are judiciously chosen, there should not be much danger.

As to the therapeutic value of the drug, in approximately 50 per cent. of cases normal rhythm is restored. In most cases, unfortunately, this result is purely temporary, and after a short time fibrillation is resumed. Only a few cases have been observed in which normal rhythm has been maintained for six months or a year. [In this connection, it is worthy of note that in a case treated by us normal rhythm is still maintained more than seven months after treatment]. Another limitation imposed on the use of the drug is its unsuitability in cases of venous stasis. Lewis concludes that the value of quinidine has so far, been greater in adding to our knowledge of fibrillation of the auricles, than it has been in therapeutics.

As in his earlier publications, Lewis deprecates the general use of the drug which should be employed only under strictly controlled conditions.

LEONARD ABRAHAMSON.

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- Ten Post-Graduate Lectures*, prefaced by SIR CLIFFORD ALLBUTT, P.C., K.C.B., F.R.S. John Ball, Sons & Danielsson, Ltd., Lond., 1922. Pp. xvi + 216. 10s. 6d.
- International Clinics*, edited by A. R. M. LANDIS, M.D. Vol. I., Series 32. 1922. J. B. Lippincott Co., Phil. and Lond. Pp. vii. + 296. 42s.
- Artificial Limbs and Amputation Stumps*, by E. MUIRHEAD LITTLE, F.R.C.S. H. K. Lewis & Co., Ltd., Lond., 1922. Pp. vii. + 319. 18s.
- Blood Transfusion*, by GEOFFREY KEYNES, M.A., M.D., F.R.C.S. Henry Frowde, Hodder & Stoughton, Lond., 1922. Pp. 166. 8s. 6d.
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- The Mechanism of the Brain and the Function of the Frontal Lobe*, by LEONARDO BIANCHI, translated by J. H. MACDONALD, M.B., CH.B., F.R.C.P.S.
- Transactions of the Edinburgh Obstetrical Society*, Ses. 1920-1921. Vol. 41. Oliver & Boyd, Edin., 1922. Pp. xxvii + 148.
- Abdominal Pain*, by PROF. NORBERT ORTNER. Translated by W. A. BRAMS, M.D. and DR. ALFRED PLUGER. Ribman Co., N.Y., 1922. Pp. xii. + 362.
- The Relations of Tuberculosis to General Bodily Conditions and to Other Diseases*, by F. PARKES WEBER, M.A., M.D., F.R.C.P. H. K. Lewis & Co., Lond., 1921. Pp. 25. 2s. 6d.
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- The Heart as a Power Chamber*, by HARRINGTON SAINSBURY, M.D., F.R.C.P. Henry Frowde, Hodder & Stoughton, Lond., 1922. Pp. xii + 248. 12s. 6d.
- Dosage Tables for Deep Therapy*, by FRIEDRICH VOLTZ. Edited by REGINALD MORTON, M.D. William Heinemann, Lond., 1922. Pp. x. + 98. 10s. 6d.
- Vitamines and the Choice of Food*, by VIOLET G. PLIMMER and R. M. A. PLIMMER, D.S.C., Longmans, Green & Co., Lond., 1922. Pp. vii. + 164. 7s. 6d.
- The Student's Guide to Vaccination*, by W. G. AITCHENSON ROBERTSON, M.D. A. & C. Black, Ltd., Lond., 1922. Pp. viii. + 88. 3s. 6d.

- The Practice of Medicine in the Tropics*, edited by W. BYAM, O.B.E. and R. G. ARCHIBALD, D.S.O. Henry Frowde, Hodder & Stoughton, Lond., 1921. Vol. I., pp. xxii. + 856; 1922, Vol. II., pp. xviii. + 1683. £4 4s. 4d.
- Medical Annual for 1922*. Fortieth year. J. Wright & Sons, Bristol. Pp. 87 + 596 + 143. 20s.
- Spadacrene Anglica*, by EDMUND DEANS, M.D. J. Wright & Sons, Bristol. Pp. xi. + 138. 6s.
- Intensive Treatment of Syphilis and Locomotor Ataxia by Acchen METHODS*, by REGINALD HAYES, M.R.C.S. Fourth edition. Bailliere, Tindall & Cox, Lond., 1922. Pp. xii + 99. 6s.
- Practical Psycho-analysis*, by H. SOMERVILLE, F.R.S. Bailliere, Tindall & Cox., Lond., 1922. Pp. vii. + 137. 6s.
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- Medical Ophthalmology*, by R. FOSTER MOORE, O.B.E., F.R.C.S. J. Archerdill, Lond., 1922. Pp. vi. + 297. 15s.
- Dictionary of Treatment and Diet*, by JAMES BURNET, M.D. Second edition. A. & C. Black, Lond., 1922. Pp. 156. 5s.
- Sex Problems in Women*, by A. G. MAGIAN, M.D. William Heinemann, Lond., 1922. Pp. iv + 1219. 12s. 6d.
- Forensic Medicine and Toxicology*, by J. DIXON MANN, M.D. Sixth edition, revised by W. A. BRAND, M.D. Charles Griffin & Co., Lond. 1922. Pp. xi. + 573. 30s.
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- Surgical Treatment*, by CHAS. GREEN CUMSTON, M.D., and GEORGE PATRY, M.D. William Heinemann. Lond., 1921. Pp. x. + 349.
- Surgical Pathology*, by ERIC PEARCE GOULD. J. & A. Churchill, Lond., 1922. Pp. vi. + 169. 6s.
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- Rickets*, by J. LAWSON DICK, M.D., F.R.C.S. William Heinemann, Lond., 1922. Pp. xiii. + 488. 20s.
- Clinical and Operative Gynæcology*. J. M. MUNRO-KERR, M.D. Henry Frowde, Hodder & Stoughton, Lond., 1922. Pp. xvi. + 832. £2 10s.

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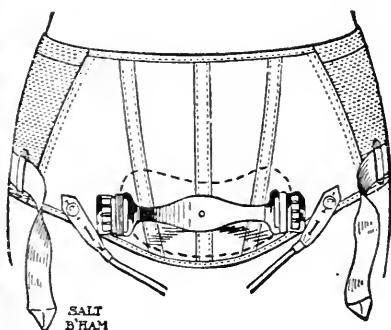
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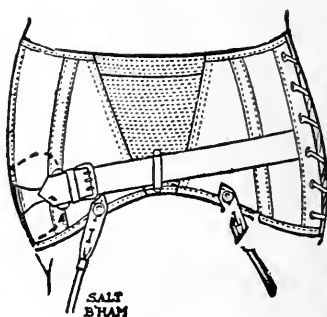
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